



HOMESTEAD

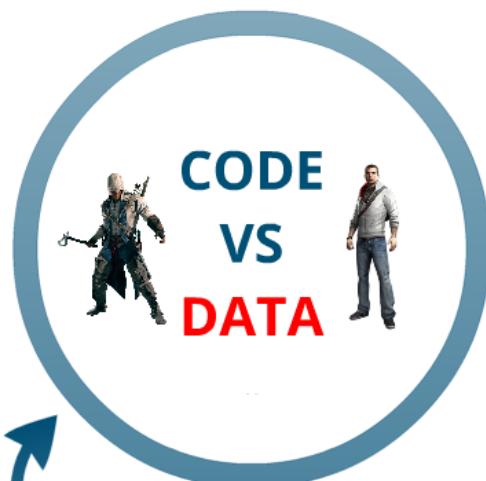
CODE, DATA AND TOOLS

Pierre-Luc Vachon
Gameplay Programmer
Ubisoft Québec

**DATA IS POWERFUL
BUT DANGEROUS**



**CREATIVE AND
FLEXIBLE TOOLS**



**GENERIC CODE
EMBRACE DATA**



CODE VS DATA



CODE-DRIVEN BEHAVIORS AND INTERACTIONS CREATED WITH CODE LOGIC

CLASSIC



OLD-SCHOOL



CODE-DRIVEN BEHAVIORS AND INTERACTIONS CREATED WITH CODE LOGIC

CLASSIC



OLD-SCHOOL



THE PROGRAMMER IS DOING ALL THE WORK

PROS

CONS

PROS

SHARED FOR EACH IMPLEMENTATIONS
OPTIMIZED
NO LIMIT
ERRORS ARE EASY TO IDENTIFY
LOT OF POWERFUL **TOOLS** FOR DEBUG

CONS

LOT OF **COMMUNICATION**
DELAYS IN LARGE SCALE
PRODUCTION
SIMPLE FEATURES CAN BE **COSTLY**
FLEXIBILITY

DATA-DRIVEN BEHAVIORS AND INTERACTIONS CREATED WITH DATA LOGIC

MODERN



CREATOR-FRIENDLY



DATA-DRIVEN BEHAVIORS AND INTERACTIONS CREATED WITH DATA LOGIC

MODERN



CREATOR-FRIENDLY



THE DESIGNER OR INTEGRATOR IS DOING THE WORK

PROS

CONS

PROS

FAST ITERATIONS
LESS **COMMUNICATION**
EASY TO CREATE SPECIFIC CASES
ALMOST NO **DOWNTIME**

CONS

MIGHT NOT BE **OPTIMAL**
SPECIFIC INSTANCES
HARD TO **MANAGE AND DEBUG**
COMPLEXITY

CODE VS DATA



FUL
S



The **HOMESTEAD**

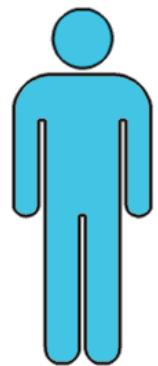


THE HOMESTEAD

Monteriggioni V2.0



**BUILDING ON
ASSASSIN'S CREED
TECHNOLOGY**



**CHARACTERS ARE LIKE
PUPPETS**

UNIQUE CHARACTERS







UNIQUE CHARACTERS

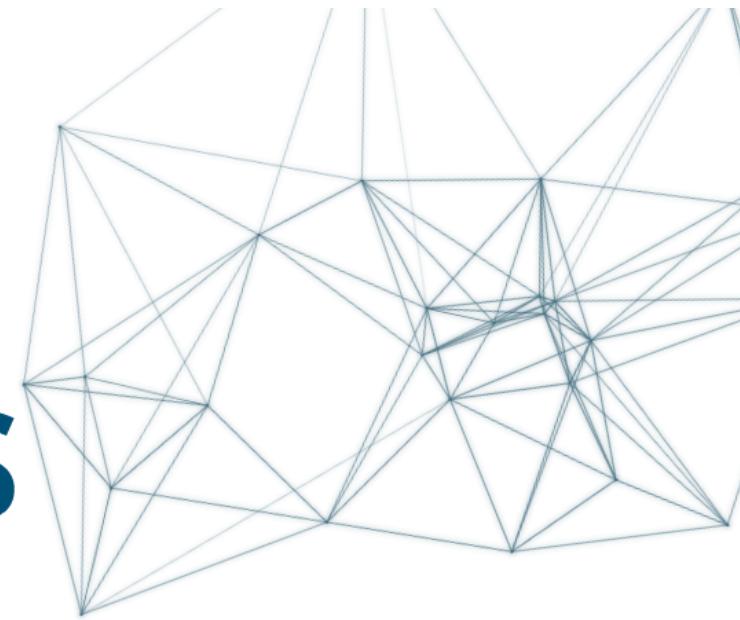


WHAT WE WANT



NPC TO BEHAVE AS CLOSE AS A REAL LIFE CHARACTER
WITH A FULL DAY OF INTERACTIONS
WITHOUT TRANSITIONS OR GLITCHES

FEATURES

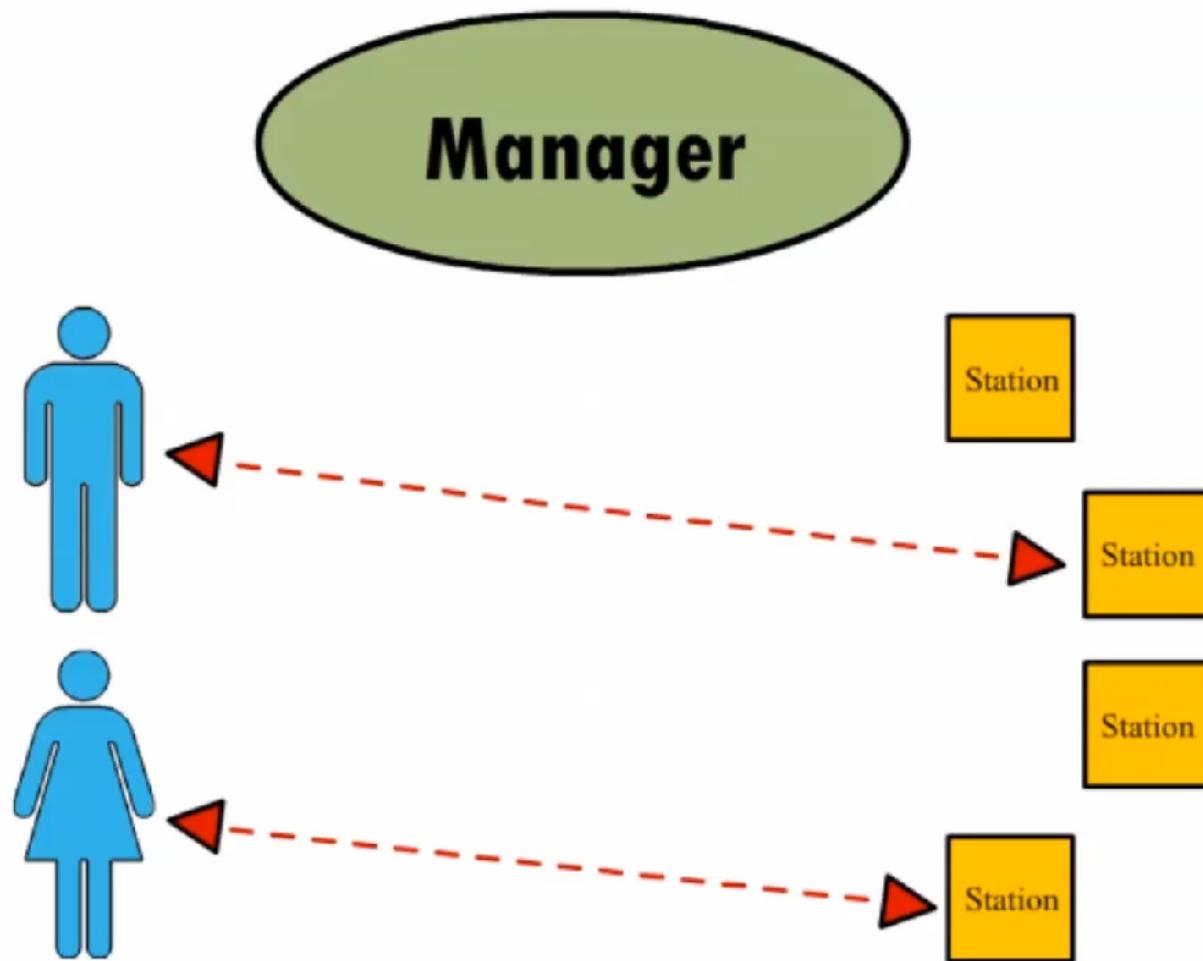


NPC IS **UNIQUE**<sup>AND INFLUENCED BY
PARAMETERS</sup>
NON-STOP^{GENERIC OR SPECIFIC ACTIVITIES}
NPC CAN **INTERACT**
MAXIMUM **QUALITY**

FIRST PROTOTYPE

A MANAGER IS HANDLING EACH NPC





FIRST PROTOTYPE

A MANAGER IS HANDLING EACH NPC



THIS IS MOSTLY A **CODE-DRIVEN** SOLUTION

FIRST PROTOTYPE

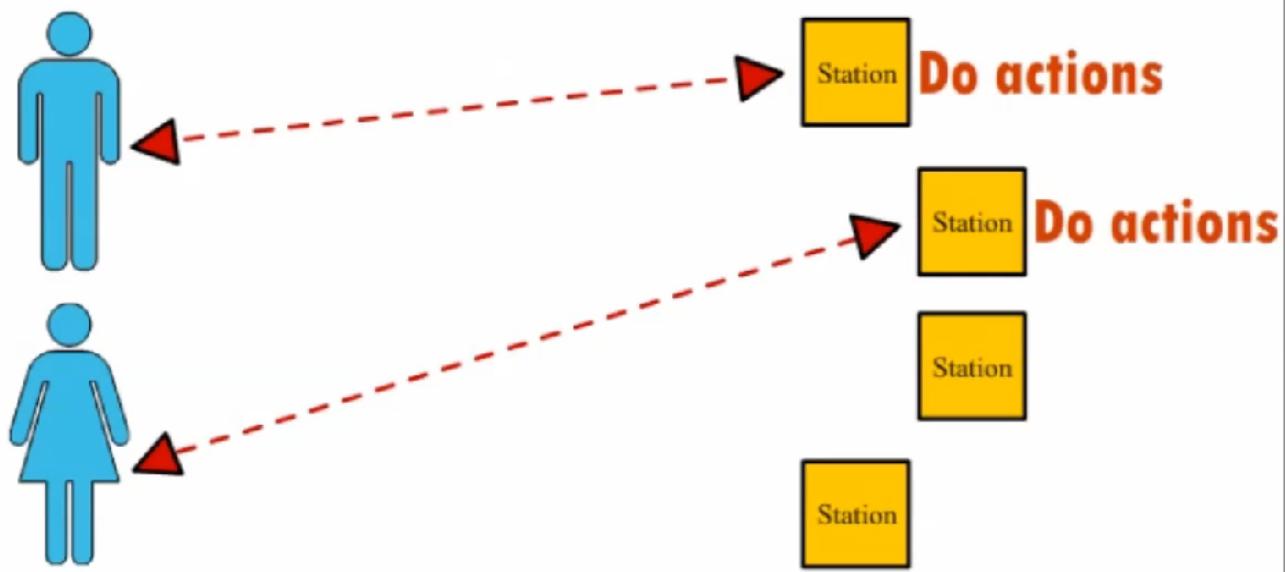


LOT OF DUPLICATION

SECOND PROTOTYPE



NO MANAGER, ALL STATIONS ARE INDEPENDENT





THIS IS MOSTLY A DATA-DRIVEN SOLUTION

SECOND PROTOTYPE

COLLABORATION WITH OTHER STUDIOS
GENERIC SOLUTION

COMPLEXITY

GYM



ENSURE THAT WE **CAN DO IT**
REFERENCE FOR THE TEAM

PRODUCTION

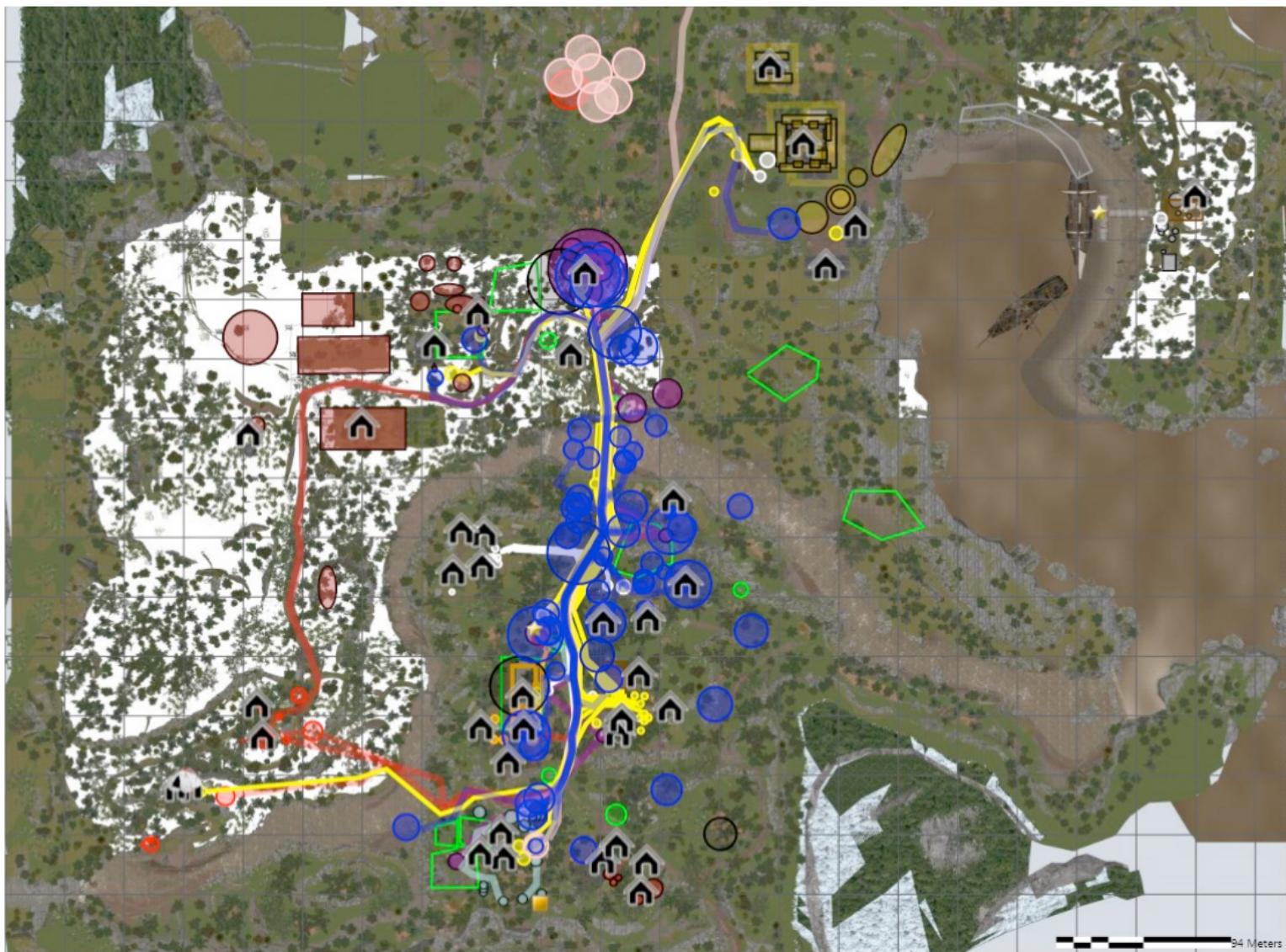
WOODWORKER
AND
HUNTRESS



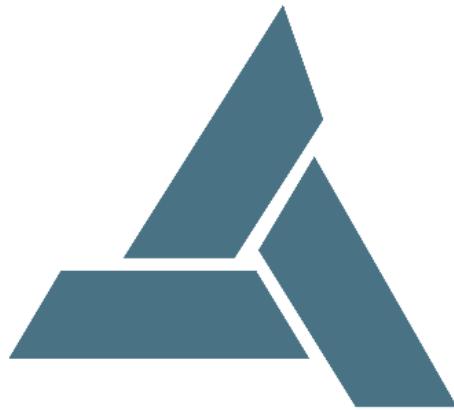
REAL
PROBLEMS
EMERGED

USING **DATA** SETUP
WE CREATED **CLUSTERS**

NAVIGATION
HOMESTEAD LAYOUT BRINGS
LONG DISTANCE





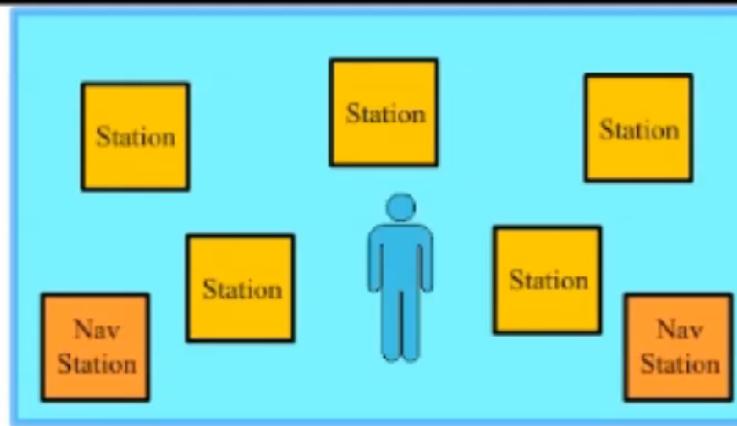


~~WE DON'T WANT THE BEST PATH~~
WE WANT THE NICEST PATH



USING DATA SETUP
WE CREATED CLUSTERS

NAVIGATION
HOMESTEAD LAYOUT BRINGS



AND PICKING THROUGH YOUR TRASH.

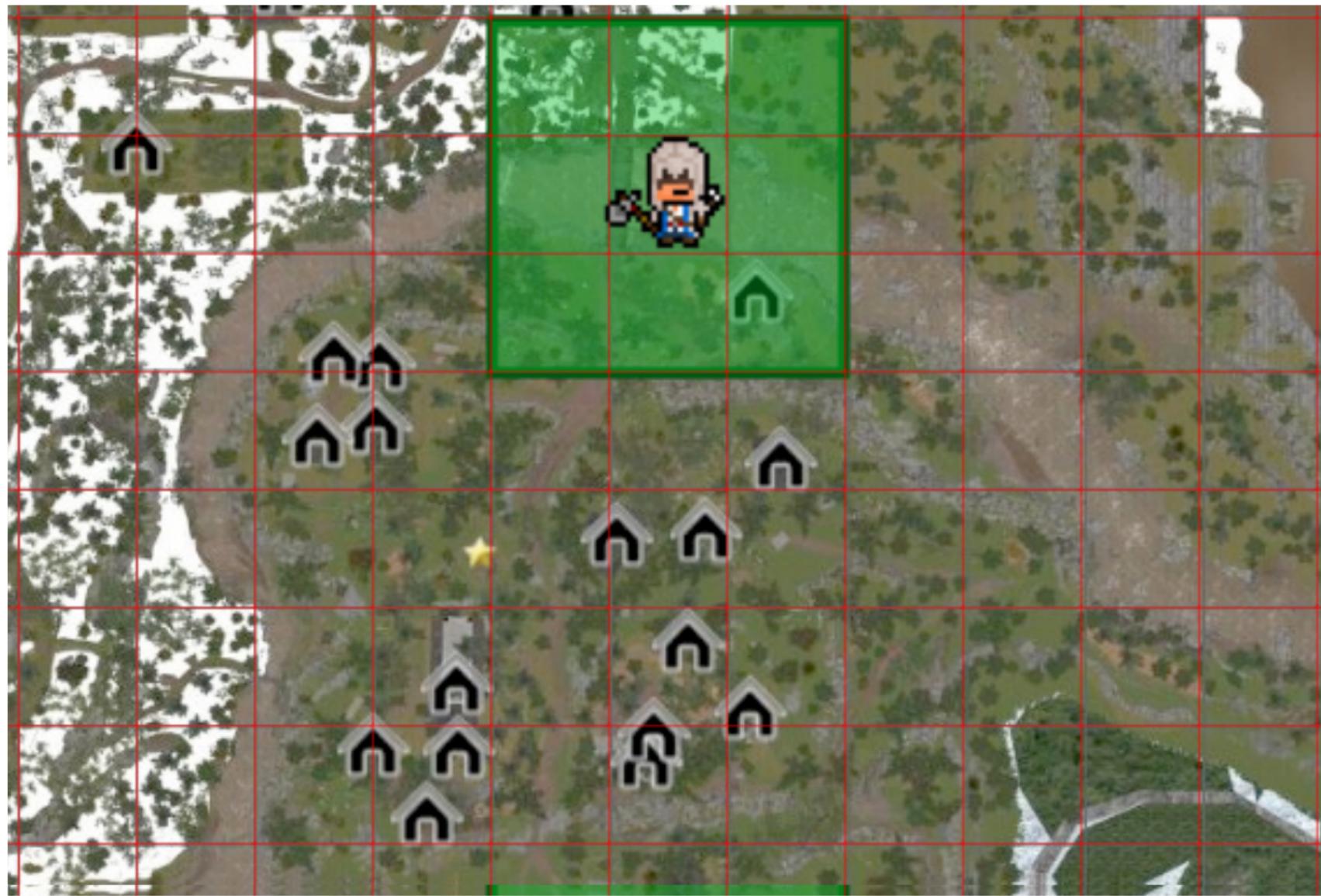
WE CREATED A SMALL TRACKING CLASS **OMNI NPC**

NPC CAN SPAWN
^{AT}
MULTIPLE PLACES

WE CAN ENSURE IT TO BE UNIQUE

...BUT WHAT ABOUT
BEING CONSISTENT?





AND PICKING THROUGH YOUR TRASH.

WE CREATED A SMALL TRACKING CLASS **OMNI NPC**

NPC CAN SPAWN
^{AT}
MULTIPLE PLACES

WE CAN ENSURE IT TO BE UNIQUE

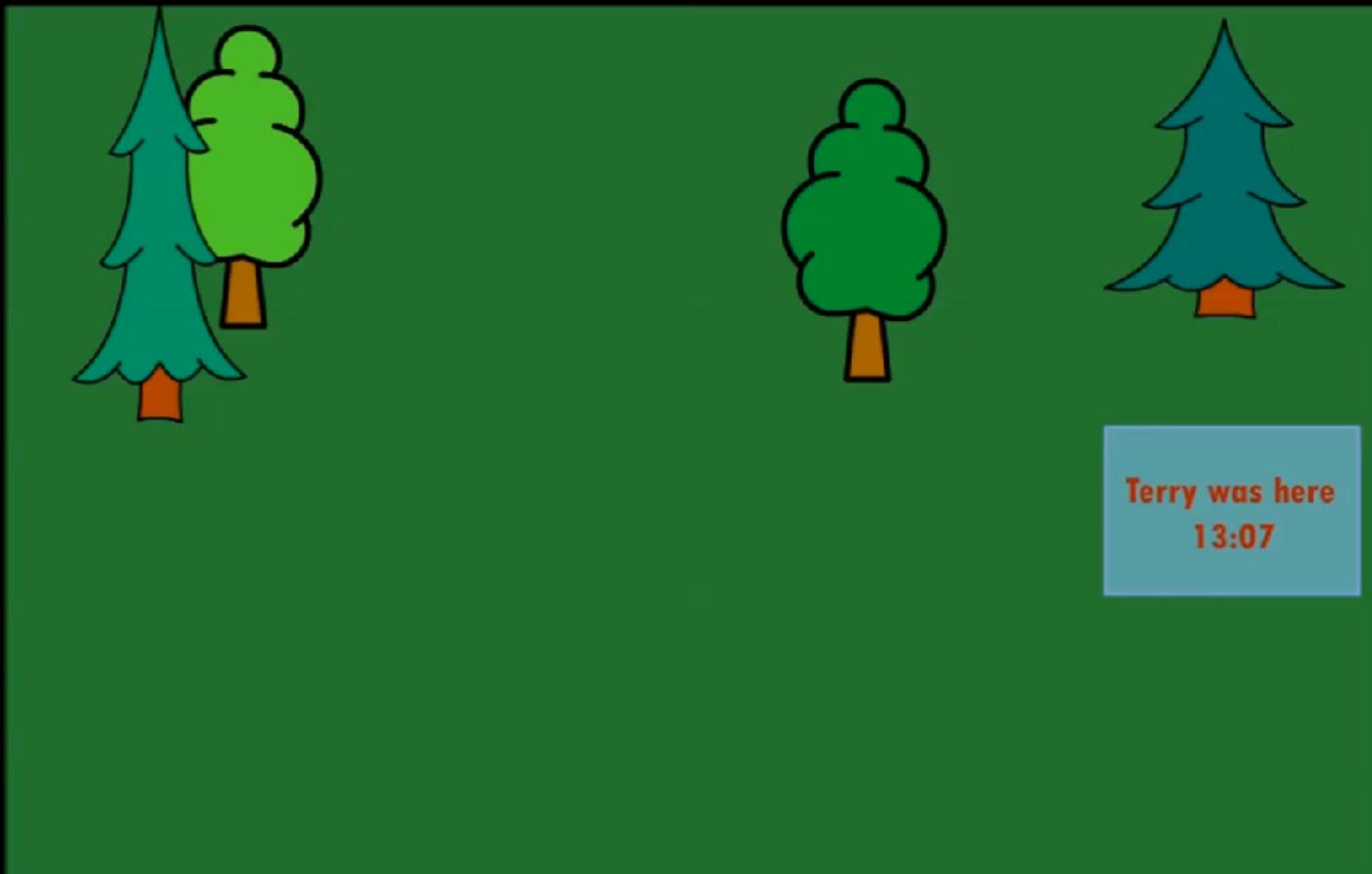
...BUT WHAT ABOUT
BEING CONSISTENT?





WE CREATED A SMALL **TRACKING CLASS**
OMNI NPC

**NPC CAN SPAWN
AT
MULTIPLE PLACES**





**WE HAVE TO MANUALLY
SET IT IN EACH STATION**



W
IN



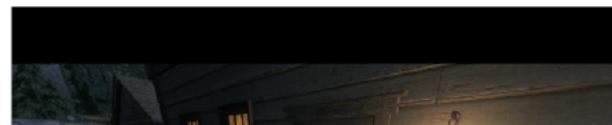
**WE REALLY WANTED
TO HAVE "REAL"
INDOOR/OUTDOOR
TRANSITIONS**



**WE WANTED TO SEE OUR NPC
DOING THOSE TRANSITIONS**

HOW CAN WE ACHIEVE THIS?

WE BRING BACK COURTESY



DOING THOSE TRANSITIONS

HOW CAN WE ACHIEVE THIS?

WE BRING BACK COURTESY





POST-PRODUCTION

20 UNIQUE NPC

500+ UNIQUE STATIONS

2000+ PARAMETERS

WAS IT A GOOD IDEA ?

MAYBE NOT THE
DECT

**"IT'S ONE OF THE GREAT TRAGEDY
OF LIFE – SOMETHING
ALWAYS
CHANGES."**



-Dr. Gregory House

500+ UNIQUE STATIONS

2000+ PARAMETERS

WAS IT A GOOD IDEA ?

MAYBE NOT THE

BEST

BUT SURELY NOT THE

WORST

HOW CAN WE DO BETTER ?

FUL
S



The **HOMESTEAD**



TOOLS



EDITOR





WHY NOT CREATE OUR
OWN **TOOLS** IN IT ?



**WHY NOT CREATE OUR
OWN TOOLS IN IT ?**

**COST TIME AND MONEY
USED BY A SMALL FRACTION OF THE TEAM
MAINTENANCE
STABILITY**

THE FORGOTTEN

YOU ALL **USED IT AND KNOW IT**



MASSIVE DATA MANIPULATION

DATA
TEMPLATE



CREATE DATA
MANIPULATION
IN CODE



MASSIVE DATA MANIPULATION

DATA
TEMPLATE



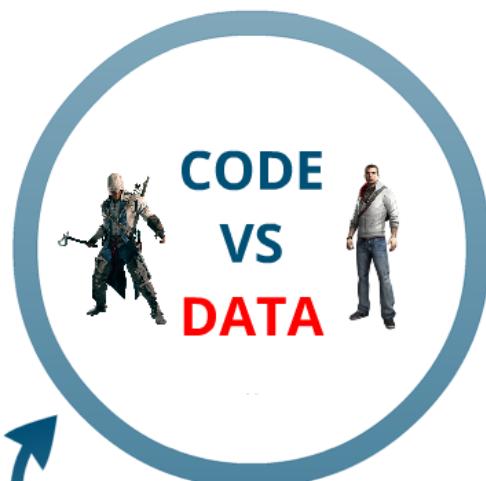
CREATE DATA
MANIPULATION
IN CODE

SCRIPTING YOUR EDITOR
CREATE SPECIFIC TOOLS

**DATA IS POWERFUL
BUT DANGEROUS**



**CREATIVE AND
FLEXIBLE TOOLS**



**GENERIC CODE
EMBRACE DATA**



CREDITS

Marc-André Jutras
Thierry Dansereau

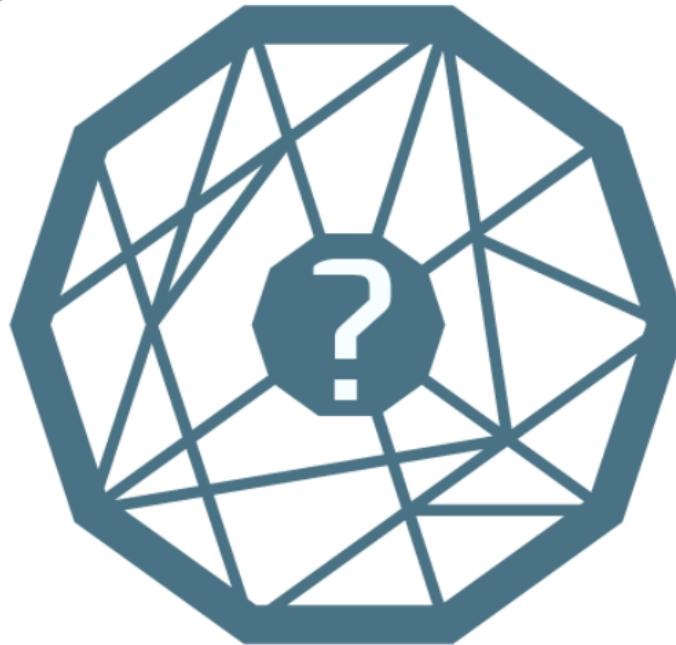
The Montreal AC3 team
Marco, Marçal, Sapin, Yoan

The Quebec AC3 team
Wesley, Gabriel, Thierry



<http://pixelblock.tumblr.com/>

Excel® is a registered trademark of Microsoft Corporation.



QUESTIONS

My contact info:

Pierre-Luc Vachon

pierre-luc.vachon@ubisoft.com

pierre-luc.vachon@outlook.com



THE END

Come and see us at the **UBISOFT** booth
if you have questions or want to buy me
a beer. Yes I am easy like that.